

# Notice of Allowability

Application No.

09/499,525

Examiner

Jakieda R. Jackson

Applicant(s)

YU ET AL.

Art Unit

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to December 29, 2005.
2. ☒ The allowed claim(s) is/are 1-5, 8-12 and 15-27 (now 1-5, 8-10, 24-27, 11-12 and 15-23, respectively).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
**WAYNE YOUNG**  
**SUPERVISORY PATENT EXAMINER**

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 29, 05 have been entered.

### ***Response to Amendment***

2. In response to the Office Action mailed November 29, 2005, applicant submitted a request for continued examination filed on December 29, 2005, in which the applicant traversed and requested reconsideration with respect to **claims 1, 11 and 17** and newly added claims 24-27.

### ***Response to Arguments***

3. Applicant's argue that the transformation to the cepstrum domain inherently includes a Fast Fourier transform, followed by a logarithmic operation and then an inverse Fast Fourier transform, in which the USPTO admits that Tewfik et al. fail to disclose. However, Sharma teaches that the cepstrum is defined as the inverse Fourier transform of the logarithm (column 12, lines 54-55). Therefore, applicant's arguments are not persuasive.

Applicants also argue that Tewfik et al. and Honsinger et al. do not teach, suggest or motivate "transforming the received audio signal to a linear prediction residue domain; and embedding the hidden data in the linear prediction residue domain via parametric representation of the audio signal. Applicant's arguments are persuasive. Applicant's arguments see remarks, filed November 10, 2005, with respect to claim 17 have been fully considered and are persuasive. The rejection of claim 17 has been withdrawn.

Applicants further argue that Sharma et al. teach that the cepstrum domain used in speech detection with watermarking of the audio signal occurring before transformation of the audio signal to the cepstrum domain. Instead the claimed invention embeds the hidden data in the cepstrum domain. Applicant's arguments, see remarks, filed November 10, 2005, with respect to claims 1 and 11 have been fully considered and are persuasive. The rejection of claims 1 and 11 has been withdrawn.

#### ***Allowable Subject Matter***

**4. Claims 1-5, 8-12 and 15-23 are allowed.**

The following is a statement of reasons for allowance:

As for independent **claim 1 and 11**, it is allowed because it recites a computer-implemented method and apparatus for embedding hidden data in an audio signal. Tewfik et al., Honsinger et al. and Sharma et al. fail to teach nor reasonably suggest transforming the received audio signal in one of a linear prediction residue domain and a cepstrum domain and embedding the hidden data in the linear prediction residue

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domain via parametric representation of the audio signal by manipulating statistical mean of selected transform. While Sharma et al. teach transformation, the watermarking of the audio signal occurs before the transformation of the audio signal to the cepstrum domain, unlike the claimed invention wherein the data is embedded one of the linear prediction residue domain and a cepstrum domain. The transform-domain representation can be shown to be more robust to severe synchronization destructive attacks than base domain representation.

Dependent claims 2-5, 8-10, 12, 15-16 and 24-27 are allowed because they further limit their parent claims.

As for independent **claim 17**, it recites a computer-implemented method for embedding hidden data in an audio signal. Prior art such as Tewfik et al., Honsinger et al. and Sharma et al. show a similar method, but fails to teach the recited method and apparatus wherein the received audio signal is transformed to a linear prediction residue domain and then embeds the hidden data in one of a linear prediction residue domain and a cepstrum domain via parametric representation of the audio signal by manipulating statistical mean of selected transform coefficients, for the transformation to be more robust to severe synchronization destructive attacks than base domain representation.

Dependent claims 18-23 are allowed because they further limit their parent claims.

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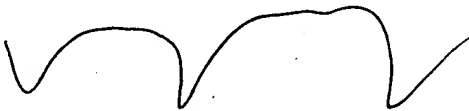
***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571.272.7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ  
January 23, 2006

  
**WAYNE YOUNG**  
**SUPERVISORY PATENT EXAMINER**